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SIGMA-ALDRICH

MATERIAL SAFETY DATA SHEET

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Version 1.3

Section 1 - Product and Company Information

Product Name	MALONONITRILE, 99%
Product Number	M1407
Brand	ALDRICH
Company	Sigma-Aldrich
Street Address	3050 Spruce Street
City, State, Zip, Country	SAINT LOUIS MO 63103 US
Technical Phone:	314 771 5765
Emergency Phone:	414 273 3850 Ext. 5996
Fax:	800 325 5052

Section 2 - Composition/Information on Ingredient

Substance Name	CAS #	SARA 313
MALONONITRILE	109-77-3	Yes
Formula	C3H2N2	
Synonyms	Cyanoacetonitrile * Dicyanomethane * Dwumetylosulfotlenku (Polish) * Malonic acid dinitrile * Malonic dinitrile * Methane, dicyano- * Methylene cyanide * Nitril kyseliny malonove (Czech) * Propanedinitrite * RCRA waste number U149 * USAF A-4600 * USAF KF-19	
RTECS Number:	003150000	

Section 3 - Hazards Identification

EMERGENCY OVERVIEW

Highly Toxic (USA) Very Toxic (EU).
Very toxic by inhalation, in contact with skin and if swallowed.
Irritating to eyes, respiratory system and skin.
Readily absorbed through skin. Target organ(s): Blood. Central nervous system.

HMIS RATING

HEALTH: 4
FLAMMABILITY: 1
REACTIVITY: 1

NFPA RATING

HEALTH: 4
FLAMMABILITY: 1
REACTIVITY: 1

For additional information on toxicity, please refer to Section 11.

Section 4 - First Aid Measures

ORAL EXPOSURE

If swallowed, wash out mouth with water provided person is conscious. Call a physician immediately.

INHALATION EXPOSURE

If inhaled, remove to fresh air. If not breathing give artificial respiration. If breathing is difficult, give oxygen.

DERMAL EXPOSURE

In case of skin contact, flush with copious amounts of water for at least 15 minutes. Remove contaminated clothing and shoes. Call a physician.

EYE EXPOSURE

In case of contact with eyes, flush with copious amounts of water for at least 15 minutes. Assure adequate flushing by separating the eyelids with fingers. Call a physician.

Section 5 - Fire Fighting Measures

FLASH POINT

186.8 °F 86 °C Method: closed cup

AUTOIGNITION TEMP

N/A

FLAMMABILITY

N/A

EXTINGUISHING MEDIA

Suitable: Carbon dioxide, dry chemical powder, or appropriate foam.

FIREFIGHTING

Protective Equipment: Wear self-contained breathing apparatus and protective clothing to prevent contact with skin and eyes.
Specific Hazard(s): Emits toxic fumes under fire conditions.

Section 6 - Accidental Release Measures

PROCEDURE TO BE FOLLOWED IN CASE OF LEAK OR SPILL

Evacuate area.

PROCEDURE(S) OF PERSONAL PRECAUTION(S)

Wear self-contained breathing apparatus, rubber boots, and heavy rubber gloves.

METHODS FOR CLEANING UP

Sweep up, place in a bag and hold for waste disposal. Avoid raising dust. Ventilate area and wash spill site after material pickup is complete.

Section 7 - Handling and Storage

HANDLING

User Exposure: Do not breathe dust. Do not get in eyes, on skin, on clothing. Avoid prolonged or repeated exposure.

STORAGE

Suitable: Keep tightly closed.

Section 8 - Exposure Controls / PPE

ENGINEERING CONTROLS

Safety shower and eye bath. Use only in a chemical fume hood.

PERSONAL PROTECTIVE EQUIPMENT

Respiratory: Government approved respirator.

Hand: Compatible chemical-resistant gloves.

Eye: Chemical safety goggles.

GENERAL HYGIENE MEASURES

Wash contaminated clothing before reuse. Wash thoroughly after handling.

EXPOSURE LIMITS, RTECS

Country	Source	Type	Value
USA	NIOSH	TWA	3 PPM

Section 9 - Physical/Chemical Properties

Appearance Physical State: Solid

Property	Value	At Temperature or Pressure
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Molecular Weight	66.06 AMU	
pH	N/A	
BP/BP Range	220 °C	760 mmHg
MP/MP Range	30 °C	
Freezing Point	N/A	
Vapor Pressure	N/A	
Vapor Density	N/A	
Saturated Vapor Conc.	N/A	
SG/Density	1.049 g/cm3	
Bulk Density	N/A	
Odor Threshold	N/A	
Volatile%	N/A	
VOC Content	N/A	
Water Content	N/A	
Solvent Content	N/A	
Evaporation Rate	N/A	
Viscosity	N/A	
Surface Tension	N/A	
Partition Coefficient	N/A	
Decomposition Temp.	N/A	
Flash Point	186.8 °F 86 °C	Method: closed cup
Explosion Limits	N/A	
Flammability	N/A	
Autoignition Temp	N/A	
Refractive Index	N/A	
Optical Rotation	N/A	
Miscellaneous Data	N/A	
Solubility	N/A	

N/A = not available

Section 10 - Stability and Reactivity

STABILITY

Stable: Stable.

Conditions to Avoid: Do not heat over: 130°C

Materials to Avoid: Strong oxidizing agents, Strong acids, Strong bases, Strong reducing agents.

HAZARDOUS DECOMPOSITION PRODUCTS

Hazardous Decomposition Products: Carbon monoxide, Carbon dioxide, Nitrogen oxides, Hydrogen cyanide.

HAZARDOUS POLYMERIZATION

Hazardous Polymerization: Will not occur

Section 11 - Toxicological Information

ROUTE OF EXPOSURE

Skin Contact: Causes skin irritation.

Skin Absorption: May be fatal if absorbed through skin. Readily absorbed through skin.

Eye Contact: Causes eye irritation.

Inhalation: May be fatal if inhaled. Material is irritating to mucous membranes and upper respiratory tract.

Ingestion: May be fatal if swallowed.

TARGET ORGAN(S) OR SYSTEM(S)

Blood. Central nervous system. Cardiovascular system.

SIGNS AND SYMPTOMS OF EXPOSURE

May be partially metabolized to cyanide in the body. The onset of symptoms is generally delayed pending conversion to cyanide. Symptoms of exposure may include headache, dizziness, convulsions, cyanosis, irregular breathing, and weak pulse. Lung irritation. CNS depression.

TOXICITY DATA

Skin

Rat

350 mg/kg

LD50

Remarks: Behavioral:Convulsions or effect on seizure threshold.

Behavioral:Excitement.

Intraperitoneal

Rat

20550 UG/KG

LD50

Remarks: Behavioral:Convulsions or effect on seizure threshold.

Behavioral:Excitement.

Subcutaneous

Rat

31500 UG/KG

LD50

Remarks: Behavioral:Convulsions or effect on seizure threshold.

Behavioral:Excitement.

Oral

Mouse

19 mg/kg

LD50

Intraperitoneal

Mouse

13 MG/KG

LD50

Remarks: Behavioral:General anesthetic. Behavioral:Convulsions or effect on seizure threshold. Lungs, Thorax, or Respiration:Dyspnea.

Intravenous

Mouse
32 MG/KG
LD50

Intraperitoneal
Rabbit
10043 UG/KG
LD50
Remarks: Blood:Other changes.

Intravenous
Rabbit
28 MG/KG
LD50

Subcutaneous
Guinea pig
21 MG/KG
LD50
Remarks: Behavioral:Convulsions or effect on seizure threshold.
Behavioral:Excitement.

IRRITATION DATA

Skin
Rabbit
4 H
Remarks: Mild irritation effect

Eyes
Rabbit
5 mg
24H
Remarks: Severe irritation effect

CHRONIC EXPOSURE - MUTAGEN

Mutation test: Histidine reversion (Ames)

Section 12 - Ecological Information

ACUTE ECOTOXICITY TESTS

Test Type: EC50 Daphnia
Species: Daphnia magna
Time: 24 h
Value: 21.4 mg/l

Test Type: LC50 Fish
Species: other fish
Time: 96 h
Value: < 1 mg/l

Section 13 - Disposal Considerations

APPROPRIATE METHOD OF DISPOSAL OF SUBSTANCE OR PREPARATION

Contact a licensed professional waste disposal service to dispose of this material. Observe all federal, state, and local environmental regulations.

Section 14 - Transport Information

DOT

Proper Shipping Name: Malononitrile

UN#: 2647
Class: 6.1
Packing Group: Packing Group II
Hazard Label: Toxic substances.
PIH: Not PIH

IATA

Proper Shipping Name: Malononitrile
IATA UN Number: 2647
Hazard Class: 6.1
Packing Group: II

Section 15 - Regulatory Information

EU DIRECTIVES CLASSIFICATION

Symbol of Danger: T N
Indication of Danger: Toxic. Dangerous for the environment.
R: 23/24/25 50/53
Risk Statements: Toxic by inhalation, in contact with skin and if swallowed. Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
S: 23 27 45 60 61
Safety Statements: Do not breathe vapor. Take off immediately all contaminated clothing. In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible). This material and its container must be disposed of as hazardous waste. Avoid release to the environment. Refer to special instructions/safety data sheets.

US CLASSIFICATION AND LABEL TEXT

Indication of Danger: Highly Toxic (USA) Very Toxic (EU).
Risk Statements: Very toxic by inhalation, in contact with skin and if swallowed. Irritating to eyes, respiratory system and skin.
Safety Statements: Do not breathe dust. Wear suitable protective clothing, gloves, and eye/face protection. In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).
US Statements: Readily absorbed through skin. Target organ(s): Blood. Central nervous system.

UNITED STATES REGULATORY INFORMATION

SARA LISTED: Yes
DEMINIMIS: 1 %
NOTES: This product is subject to SARA section 313 reporting requirements.
TSCA INVENTORY ITEM: Yes

CANADA REGULATORY INFORMATION

WHMIS Classification: This product has been classified in accordance with the hazard criteria of the CPR, and the MSDS contains all the information required by the CPR.
DSL: Yes
NDSL: No

Section 16 - Other Information

DISCLAIMER

For R&D use only. Not for drug, household or other uses.

WARRANTY

The above information is believed to be correct but does not

purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. Sigma-Aldrich Inc., shall not be held liable for any damage resulting from handling or from contact with the above product. See reverse side of invoice or packing slip for additional terms and conditions of sale. Copyright 2004 Sigma-Aldrich Co. License granted to make unlimited paper copies for internal use only.